

Model Curriculum

Loader Operator

SECTOR: Mining
SUB-SECTOR: Mining Operation
OCCUPATION: HEMM Operations
REF ID: MIN/Q0208, V1.0
NSQF LEVEL: 4



Certificate

COMPLIANCE TO QUALIFICATION PACK – NATIONAL OCCUPATIONAL STANDARDS

is hereby issued by the

SKILL COUNCIL FOR MINING SECTOR

for

MODEL CURRICULUM

Complying to National Occupational Standards of
Job Role/ Qualification Pack: **'Loader Operator'** QP No. **'MIN/QoZo8NSQF Level 4'**

Date of Issuance: July 23rd, 2018

Valid up to*: March 31st, 2019

*Valid up to the next review date of the Qualification Pack or the
'Valid up to' date mentioned above (whichever is earlier)


Authorised Signatory
(Skill Council for Mining Sector)



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Loader Operator

CURRICULUM/SYLLABUS

This program is aimed at training candidates for the job of a “Loader Operator”, in the “Mining & Allied” Sector/Industry and aims at building the following key competencies amongst the learner.

Program Name	Loader Operator		
Qualification Pack Name & Reference ID.	MIN/Q0208		
Version No.	1.0	Version update date	23/07/2018
Pre-requisites to Training	Preferable Class XII		
Training Outcomes	<p>After completing this programme, participants will be able to:</p> <ul style="list-style-type: none"> • Evaluate pre-operation checks to ensure the Loader is safe to use. • Demonstrate loader operations • Perform preventive maintenance in accordance with the manufacturer’s recommendations and company procedures • Practice basic diagnostics and Troubleshooting • Report problem/incidents & Documentation • Illustrate critical health and safety measures for open-cast mines 		

This course encompasses 5 out of 5 National Occupational Standards (NOS) of “Loader Operator” Qualification Pack issued by “Skill Council for Mining Sector”.

Sr. No.	Module	Key Learning Outcomes	Equipment Required
1	<p>Introduction</p> <p>Theory Duration (hh:mm) 10:00</p> <p>Practical Duration (hh:mm) 26:00</p> <p>Corresponding NOS Code Bridge Module</p>	<ul style="list-style-type: none"> Outline the general discipline in the class room (Do's & Don'ts) Explain the role of loader operator in mining industry Define benching in quarries, dressing of overhangs, undercuts, fencing, first aid and hygiene Illustrate the standing orders in force at the mine. Practice safety in the vicinity of machinery. Recall character of shot-firing and safety regulations. How and where to take shelter. Make use of basic skills of communication Utilize the basic reading capabilities to enable reading of signs, notices and/or cautions at site. 	Computer With Internet, LCD Projector
2	<p>Prepare Loader</p> <p>(hh:mm) 20:00</p> <p>Practical Duration (hh:mm) 40:00</p> <p>Corresponding NOS Code MIN/N0228</p>	<ul style="list-style-type: none"> Plan the job adhering to time limits given by supervisor Inspect all mounting bolts for tightness Ensure that all securing pins are in position in pivot pins and ram pins Ensure that hose routes are clean and free from soil and stones etc. Inspect the area around the slewing rams is clean and clear of any debris. Measure hydraulic oil level. If necessary, replenish with clean new hydraulic oil Examine the coolant level of radiator Examine engine oil level monitor Inspect the condition of parking brake, main horn, reverse horn, and head light. Utilize the various control gauges. Explain fan belt tension, electrolyte level and terminal tightness Examine the air filter dust bowls Organize proper drainage of water and sediment from the fuel tank. Apply grease to all greasing pins and pivot points Follow manufacturer's instructions for care and safe operation of the loader. Outline the dimensions of the machine, the work area, weight of the machine as well as the heavy load to ensure safety while in operation 	Helmet, Dust Mask, Goggles, Ear Plug, Gloves, Reflective Jacket, Safety Belt, Gum Boots, Fire Extinguisher Cylinders, First Aid Box, Fire Fighting Charts, First Aid Charts, Computer with Internet, LCD Projector, Trainer, Pin Up Boards, White Board, Loader, Tire Pressure Meter, Vehicle Driver Tool Box, Vehicle Log Book, loader simulator, Slide wrench, Spanner Set, loader
3	<p>Perform Loader Operations</p>	<ul style="list-style-type: none"> Plan and organize the job according to given instructions and schedule 	Helmet, Dust Mask, Goggles, Ear Plug, Gloves, Reflective

	<p>Theory Duration (hh:mm) 12:00</p> <p>Practical Duration (hh:mm) 210:00</p> <p>Corresponding NOS Code MIN/N0229</p>	<ul style="list-style-type: none"> Inspect the worksite to identify any loose soil, hidden deep trenches or marshy patches where loader could get stuck. Demonstrate the how to start the engine using the pushbutton switch and key switch together Make use of priming pump and pre-heater to start the engine in cold weather conditions Ensure that the backhoe is in transport position while the tractor is moving. Judge the shifting quadrant device for selecting the correct gear range Ensure the loader load and operating speed is within limits Perform the in-operation visual checks on critical temperature and pressure gauges. Ensure that walkway rules e.g. operating the Loader within the permissible/allocated areas are followed. Apply various signaling devices available in the Loader such as turn signal, parking indicator, air horn etc. Ensure a safe distance from a tip edge and use an approved stop block before tipping over an edge Make use of the digger stabilizer legs to level the machine when working on a slope Judge stability and anchorage during digging operation by using the loader arms to lift the front wheel clear on the ground. Illustrate the four levers provided to control the digging arm, dipper arm and stabilizer legs Perform the discharge operation of loader with safety and in the manner designated by the supervisor Ensure that no other operators travel on or stand near the Loader Ensure that backhoe is never used for craning Select and use the right type of brake in different situations and conditions. Inform supervisor of any problems while operating the Loader Ensure that loader is always parked on firm, level ground; with handbrake applied and drive and controls disengaged 	<p>Jacket, Safety Belt, Gum Boots, Fire Extinguisher Cylinders, First Aid Box, Fire Fighting Charts, First Aid Charts, Computer with Internet, LCD Projector, Trainer, Loader, Tire Pressure Meter, Vehicle Driver Tool Box, Vehicle Log Book, loader simulator, Slide wrench, Spanner Set, loader</p>
4	<p>Perform basic maintenance and troubleshooting on Loader</p> <p>Theory Duration (hh:mm) 30:00</p> <p>Practical Duration</p>	<ul style="list-style-type: none"> List machine operating hours to assess the right service schedule. Illustrate cleaning of air filter Ensure cleanliness of footplates, pedals and steps free from mud, dirt, ice and snow Measure the levels of replenish coolants, lubricants and fluids in engine List the all greasing location including pins and pivot points Measure battery levels and condition of the terminals and carrying out minor adjustments if required. Perform maintenance of tyre rims, air pressure, wheel nuts and treads. 	<p>Helmet, Dust Mask, Goggles, Ear Plug, Gloves, Reflective Jacket, Safety Belt, Gum Boots, Fire Extinguisher Cylinders, First Aid Box, Fire Fighting Charts, First Aid Charts, Computer with Internet, LCD Projector, Loader, Tire Pressure Meter, Vehicle Driver Tool Box, Vehicle Log Book, loader simulator, Slide wrench, Spanner Set</p>

	<p>(hh:mm) 50:00</p> <p>Corresponding NOS Code MIN/N0230</p>	<ul style="list-style-type: none"> • Ensure completion of timely and legibly daily/weekly maintenance/defect sheets as provided by the company • Ensure the locking bar is in position to prevent the front and rear chassis moving and creating a crushing zone (articulated machines only) • Ensure that no maintenance task on the engine is performed when running or still hot. • Test the instrument panel and control gauge to identify out of range readings to find the defect / cause of failure • Analyze when the problem is beyond his competence and appraise the problem to reporting personnel 	
5	<p>Carry Out Reporting and Logging – Loader Operator</p> <p>Theory Duration (hh:mm) 10:00</p> <p>Practical Duration (hh:mm) 20:00</p> <p>Corresponding NOS Code MIN/N0231</p>	<ul style="list-style-type: none"> • Interpret problems/incidents as applicable in a timely manner • Develop reporting procedures as prescribed by the employer • Determine any unsafe act/condition in work area which may endanger his or his colleague’s life • List the details accurately using the appropriate format • Prepare all documentation within stipulated time. • Ensure that all the documents are available to all appropriate authorities to inspect 	<p>Helmet, Dust Mask, Goggles, Ear Plug, Gloves, Reflective Jacket, Safety Belt, Gum Boots, Fire Extinguisher Cylinders, First Aid Box, Fire Fighting Charts, First Aid Charts, Computer with Internet, LCD Projector, Trainer, Pin Up Boards, White Board, Loader, Tire Pressure Meter, Vehicle Driver Tool Box, Vehicle Log Book, loader simulator, Slide wrench, Spanner Set</p>
6	<p>Health and safety</p> <p>Theory Duration (hh:mm) 20:00</p> <p>Practical Duration (hh:mm) 62:00</p> <p>Corresponding NOS Code MIN/N0204</p>	<ul style="list-style-type: none"> • Comply with occupational health and safety regulations adopted by the employer. • Examine the mining operations procedures with respect to materials handling and accidents • Choose the correct safety steps in case of accident or major failure • Comply with safety regulations and procedures in case of fire hazard. • Classify various grades of fire extinguishers. • Demonstrate the work and responsibly of the worker so that no one’s health and safety is put in risk, including members in the public • Perform storage and transport of hazardous materials compliant with safety guidelines prescribed by DGMS. • Identify characteristics of post-blast fumes and take necessary precautions. • Make use of wearing safety gear such as hard hat, respiratory protection, eye protection, ear protection • Utilize the manufacturer’s instructions for care and safe operation of the equipment. 	<p>Helmet, Dust Mask, Goggles, Ear Plug, Gloves, Reflective Jacket, Safety Belt, Gum Boots, Fire Extinguisher Cylinders, First Aid Box, Fire Fighting Charts, First Aid Charts, Computer with Internet, LCD Projector, Trainer, Pin Up Boards, White Board, Loader, Tire Pressure Meter, Vehicle Driver Tool Box, Vehicle Log Book, loader simulator, Slide wrench, Spanner Set</p>

<p>Total Duration</p> <p>Theory Duration 102:00</p> <p>Practical Duration 408:00</p>	<p>Unique Equipment Required:</p> <p>Loader simulator(optional), Helmet, Dust Mask, Goggles, Ear Plug, Gloves, Reflective Jacket, Safety Belt, Gum Boots, Fire Extinguisher Cylinders, First Aid Box, Fire Fighting Charts, First Aid Charts, Computer with Internet, LCD Projector, Loader, Tire Pressure Meter, Vehicle Driver Tool Box, Vehicle Log Book, loader simulator, Slide wrench, Spanner Set</p>
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Grand Total Course Duration: 510 Hours, 0 Minutes

(This syllabus/ curriculum has been approved by SSC: Skill Council for Mining Sector)

Trainer Prerequisites for Job role: “Loader Operator” mapped to Qualification Pack: “MIN/Q0208”

Sr. No	Area	Details
1	Description	To deliver accredited training service, mapping to the curriculum detailed above, in accordance with the Qualification Pack “MIN/Q0208”.
2	Personal Attributes	This job requires sensitivity to problem solving, safety orientation, reading, writing and communication skills and good agility. The person should be of good physical condition with good vision and must pass through periodic medical tests.
3	Minimum Educational Qualifications	Class X/ ITI or Diploma in Mining/ Mechanical or B-Tech in Mining/ Mechanical
4a	Domain Certification	Certified for Job Role: “Loader operator” mapped to QP: “MIN/Q0208, v1.0”. Minimum accepted score is 80%
4b	Platform Certification	Recommended that the Trainer is certified for the Job Role: “Trainer”, mapped to the Qualification Pack: “MEP/Q0102”. Minimum accepted score as per SSC guidelines is 80%.
5	Experience	<ol style="list-style-type: none"> 1. Class X/ ITI – 6 years 2. Diploma in Mining/ Mechanical – 5 years 3. B-Tech in Mining/ Mechanical – 4 years

Annexure: Assessment Criteria

Assessment Criteria for Loader operator	
Job Role	Loader Operator
Qualification Pack	MIN/Q0208
Sector Skill Council	Skill Council for Mining Sector

Guidelines for Assessment

1. Criteria for assessment for each Qualification Pack will be created by the Sector Skill Council. Each Performance Criteria (PC) will be assigned marks proportional to its importance in NOS. SSC will also lay down proportion of marks for Theory and Skills Practical for each PC.
2. The assessment for the theory part will be based on knowledge bank of questions created by the SSC.
3. Individual assessment agencies will create unique question papers for theory part for each candidate at each examination/training centre (as per assessment criteria below).
4. Individual assessment agencies will create unique evaluations for skill practical for every student at each examination/training centre based on these criteria.
5. To pass the Qualification Pack, every trainee should score a minimum of 70% in every NOS.
6. In case of successfully passing only certain number of NOS's, the trainee is eligible to take subsequent assessment on the balance NOS's to pass the Qualification Pack.

Assessment Outcome	Assessment Criteria	Total Mark (100)	Out Of	Marks Allocation	
				Theory	Skills Practical
1. MIN/N 0228 (Prepare Loader)	PC1. Adhere to time limits given by supervisor	20	1	1	0
	PC2. Check all mounting bolts for tightness		1	0	1
	PC3. Check that all securing pins are in position in pivot pins and ram pins		1	0	1
	PC4. Check that hose routes are clean and free from soil and stones etc.		1	0	1
	PC5. Check that the area around the slewing rams is clean and clear of any debris.		1	0	1
	PC6. Check hydraulic oil level. If necessary replenish with clean new hydraulic oil		1	0	1

	PC7. Check radiator coolant level monitor.		1	0	1
	PC8. Check engine oil level monitor		1	0	1
	PC9. Check condition of parking brake, main horn, reverse horn, and head light.		1	0	1
	PC10. Check the various control gauges.		1	0	1
	PC11. Check fan belt tension, electrolyte level and terminal tightness		1	0	1
	PC12. Clean air filter dust bowls		1	0	1
	PC13. Drain water and sediment from the fuel tank.		1	0	1
	PC14. Apply grease to all greasing pins and pivot points		1	0	1
	PC15. Follow manufacturer's instructions for care and safe operation of the Loader.		1	1	0
	PC16. Work responsibly and carefully so as not to put the health and safety of self or others at risk.		1	0	1
	PC17. Before beginning with the task, clearly understand the dimensions of the machine, the work area, weight of the machine as well as the heavy load to ensure safety while in operation		2	1	1
	PC18. Maintain a checking/maintenance logbook to record all activities performed before starting the Loader		1	1	0
	PC19. Inform supervisor of problems that are beyond scope of his role		1	1	0
		Total	20	5	15
		30			
2. MIN/N 0229 (Perform Loader Operations)	PC1. Plan and organize the job according to given instructions and schedule		1	1	0

	PC2. Inspect the worksite to identify any loose soil, hidden deep trenches or marshy patches where loader could get stuck.		1	0	1
	PC3. Start the engine using the pushbutton switch and key switch together		1	0	1
	PC4. Use the priming pump and preheater to start the engine in cold weather conditions		1	0	1
	PC5. Ensure that the backhoe is in transport position while the tractor is moving.		1	0	1
	PC6. Operate the shifting quadrant device for selecting the correct gear range		1	0	1
	PC7. Ensure the loader load and operating speed is within limits; specifically limits speed when moving around pipes, cables or other workers.		1	1	0
	PC8. Perform in-operation visual checks on critical temperature and pressure gauges.		1	0	1
	PC9. Ensure that walkway rules e.g. operating the Loader within the permissible/allocated areas are followed.		1	0	1
	PC10. Utilize judiciously various signalling devices available in the Loader such as turn signal, parking indicator, air horn etc.		1	0	1
	PC11. Keep a safe distance from a tip edge and use an approved stop block before tipping over an edge		2	0	2
	PC12. Keep a safe distance from other plant or vehicles		1	0	1
	PC13. Deploys the digger stabilizer legs to level the machine when working on a slope		1	0	1
	PC14. Obtains stability and anchorage during digging operation by using the loader arms to lift the front wheel clear on the ground.		1	0	1
	PC15. Deftly operates the four levers provided to control the digging arm, dipper arm and stabilizer legs		1	0	1

	PC16. Effectively manoeuvres the joystick lever provided for backhoe operations.		1	0	1
	PC17. Discharge the load safely at the position and in the manner designated by the supervisor		1	0	1
	PC18. Ensure that no other operators travel on or stand near the Loader		1	0	1
	PC19. Ensure that backhoe is never used for craning		1	0	1
	PC20. Select and use the right type of brake in different situations and conditions.		2	1	1
	PC21. Inform supervisor of any problems while operating the Loader		1	1	0
	PC22. Ensure that Loader is always parked on firm, level ground; with handbrake applied and drive and controls disengaged		2	1	1
		Total	25	5	20
3. MIN/N 0230 (Perform basic maintenance and troubleshooting on Loader)	PC1. Track machine operating hours to assess the right service schedule.	15	1	1	0
	PC2. Clean air filter dust bowls		1	0	1
	PC3. Clean footplates, pedals and steps free from mud, dirt, ice and snow		1	0	1
	PC4. Drain water and sediment /fuel separators		1	0	1
	PC5. Replenish coolants, lubricants and fluids		1	0	1
	PC6. Grease all greasing pins and pivot points		1	0	1
	PC7. Check battery levels and condition of the terminals and carrying out minor adjustments if required.		1	0	1
	PC8. Check and maintain the tyre rims, air pressure, wheel nuts and treads.		2	1	1
	PC9. Complete timely and legibly daily/weekly maintenance/defect sheets as provided by the company		1	1	0

	PC10. Ensure the locking bar is in position to prevent the front and rear chassis moving and creating a crushing zone (articulated machines only)		1	0	1
	PC11. Ensure that no maintenance task on the engine is performed when running or still hot.		1	0	1
	PC12. Check the instrument panel and control gauge to identify out-of range readings to find the defect / cause of failure		2	1	1
	PC13. Assess when the problem is beyond his competence and report the problem to suitably qualified and competent personnel		1	1	0
		Total	15	5	10
4. MIN/N 0231 (Carry Out Reporting and Logging)	PC1. Report problems/incidents as applicable in a timely manner		1	0	1
	PC2. Report to the appropriate authority as laid down by the employer		1	1	0
	PC3. Follow reporting procedures as prescribed by the employer		1	0	1
	PC4. Report any unsafe act/condition in work area which may endanger his or his colleagues life		2	1	1
	PC5. Identify documentation to be completed relating to one's role		1	0	1
	PC6. Record details accurately using the appropriate format		1	0	1
	PC7. Complete all documentation within stipulated time.		1	1	0
	PC8. Make sure documents are available to all appropriate authorities to inspect	10	2	1	1
		Total	10	4	6
5. MIN/N 0204 (Health and Safety)	PC1. Comply with occupational health and safety regulations adopted by the employer.	30	2	1	1
	PC2. Follow mining operations procedures with respect to materials handling and accidents		2	1	1
	PC3. Follow the correct safety steps in case of accident or major failure		2	1	1

	PC4. Comply with safety regulations and procedures in case of fire hazard.		3	1	2
	PC5. Operate various grades of fire extinguishers.		4	1	3
	PC6. Work responsibly and as safe and careful as possible so as not to put the health and safety of self or others at risk, including members of the public		4	1	3
	PC7. Perform storage and transport of hazardous materials compliant with safety guidelines prescribed by DGMS.		3	1	2
	PC8. Identify characteristics of post-blast fumes and take necessary precautions.		3	0	3
	PC9. Wears safety gear such as hard hat, respiratory protection, eye protection, ear protection		4	1	3
	PC10. Follow the manufacturer's instructions for care and safe operation of the equipment.		3	1	2
		Total	30	9	21